

Claims:

1. A method for configuring a control sequence in an imaging system including a plurality of independently controllable subsystems, and control circuitry for commanding activities of the subsystems, the method comprising the steps of:

5 defining a first logical component module including instructions for executing a first activity of at least one subsystem and a second time boundary for execution of the first activity;

10 defining a second logical component module including instructions for executing a second activity of at least one subsystem and a second time boundary for execution of the second activity; and

15 assembling the first and second logical component modules into a control sequence; and

storing the control sequence in a memory circuit.

20 2. The method of claim 1, wherein the subsystems include at least two coil sets for producing magnetic fields in a subject of interest, and wherein at least one of the first and second logical component modules includes instructions for commanding operation of a coil set for more than one axis.

25 3. The method of claim 2, wherein at least one of the first and second logical component modules includes instructions for producing a desired pulse in at least a first of the coil sets.

30 4. The method of claim 3, wherein at least one of the first and second logical component modules includes a time mask for preventing pulse in at least a second of the coil sets.

5. The method of claim 1, wherein a trailing edge of the time boundary of the first logical component module coincides with a leading edge of the time boundary of the second logical component module.

5 6. The method of claim 1, wherein at least one of the first and second logical component modules includes a time mask for acquisition of image data via a signal detection subsystem.

10 7. A method for controlling an imaging system, the imaging system including data acquisition circuitry for generating pixel signals representative of discrete pixels in an image, control circuitry configured to command operation of the data acquisition circuitry, and signal processing circuitry for processing the pixel signals, the method comprising the steps of:

15 commanding a first activity of the imaging system as defined by a first logical component module, the first logical component module including instructions for controlling a first set of parameters in the first activity and a first time boundary for execution of the first activity; and

20 commanding a second activity of the imaging system as defined by a second logical component module, the second logical component module including instructions for controlling a second set of parameters in the second activity and a second time boundary for execution of the second activity.

25 8. The method of claim 7, wherein the data acquisition circuitry includes a plurality of independently controllable axes, and wherein the first and second activities each include at least one desired pulse for at least one of the axes.

30 9. The method of claim 7, wherein at least one of the first and the second logical component modules includes a time mask of an additional

axis for which no activity is desired during the respective first or second time boundary.

5 10. The method of claim 7, wherein the first and second logical component modules are stored in a memory circuit coupled to the control circuitry.

10 11. The method of claim 7, wherein the first and second logical component modules are mutually time adjacent, such that a trailing edge of the first time boundary coincides in time with a leading edge of the second time boundary.

15 12. A method for time optimizing a control sequence in an imaging system, the imaging system including data acquisition circuitry for generating pixel signals representative of discrete pixels in an image, control circuitry configured to command operation of the data acquisition circuitry, and signal processing circuitry for processing the pixel signals, the method comprising the steps of:

20 defining a plurality of command modules, each command module including instructions for commanding an activity of at least one independently controllable component of the imaging system and a time boundary for execution of the activity;

25 assembling at least two of the command modules into a control sequence wherein a trailing edge of a time boundary of the a first command module establishes an earliest location for a leading edge of a time boundary of a second command module; and

storing the control sequence in a memory circuit.

13. The method of claim 12, wherein at least one of the command modules includes instructions for activities on at least two independently controllable components of the imaging system.

5 14. The method of claim 13, wherein the time boundary of at least one of the command modules includes a first portion for a first component and a second portion for a second component, the second portion extending over a longer duration than the second portion.

10 15. The method of claim 12, wherein at least one of the command modules includes instructions for pulsing a coil set to produce a magnetic field in a subject of interest.

15 16. The method of claim 12, wherein at least one of the command modules includes instructions for detecting signals representative of pixel data.

17. The method of claim 12, wherein a portion of a time boundary for at least one of the command modules is operator adjustable.

20 18. The method of claim 12, including the step of graphically representing each command module in an operator station such that time boundaries for each command module are defined by graphical boundaries having dimensions representative of duration for activity commanded by the command modules.

25 19. An imaging system for producing an image of a subject of interest, the imaging system comprising:

30 a data acquisition subsystem for producing signals representative of the image;

5 a control circuit coupled to the data acquisition subsystem, the control circuit being configured to command activities of components of the data acquisition subsystem in accordance with a plurality of logical command modules, each module defining an activity of at least one component of the data acquisition subsystem and a time boundary defining a time period for the activity; and

a memory circuit for storing the logical command modules in a predefined sequence.

10 20. The imaging system of claim 19, wherein components of the data acquisition subsystem include coil sets for a plurality of axes, and wherein at least one command module includes instructions for activities of at least two axes within a time boundary.

15 21. The imaging system of claim 19, wherein at least one of the command modules includes instructions for generating pulsed emissions from at least one component.

22. The imaging system of claim 21, wherein at least one
20 command module includes a time mask preventing activity of at least one
component within a time boundary.

23. The imaging system of claim 19, wherein at least two of the command modules are temporally juxtaposed such that a trailing edge of a time boundary for a first command module is coincident with a leading edge of a second command module.

24. A magnetic resonance imaging system comprising:

a plurality of coil sets for generating magnetic fields in a subject of interest and for detecting emissions from the subject for reconstruction into an image;

5 a controller coupled to the coil sets and configured to apply pulse sequences to the coil sets to generate the magnetic fields and to detect the emissions in accordance with a plurality of command modules assembled into a pulse sequence routine, each command module defining an activity for at least one coil set and a time boundary for the activity; and

10 a memory circuit coupled to the controller for storing the command modules.

25. The imaging system of claim 24, wherein at least one of the command modules defines activities for a plurality of coil sets.

15 26. The imaging system of claim 24, wherein the pulse sequence routine is time optimized by juxtaposition of time boundaries for at least two of the command modules.

20 27. An image produced by the control sequence in accordance with claim 1.

28. An image produced by the method of claim 7.

29. An image produced by the control sequence of claim 12.

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